Monitoring performance using the Performance Inventory pages

Active IQ Unified Manager 9.9

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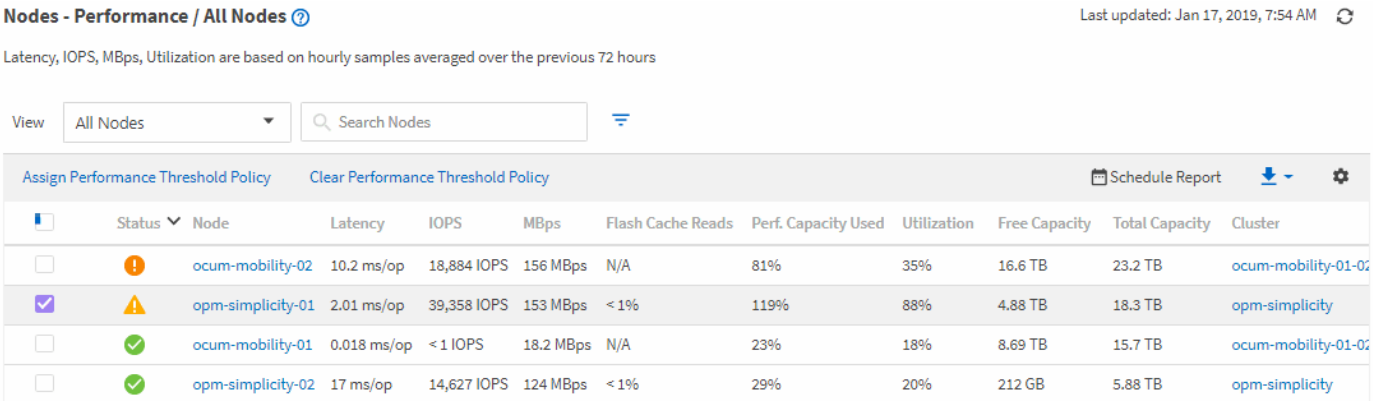
Monitoring performance using the Performance Inventory pages

The object inventory performance pages display performance information, performance events, and object health for all objects within an object type category. This provides you with an at-a-glance overview of the performance status of each object within a cluster, for example, for all nodes or all volumes.

Object inventory performance pages provide a high-level overview of object status, enabling you to assess the overall performance of all objects and compare object performance data. You can refine the content of object inventory pages by searching, sorting, and filtering. This is beneficial when monitoring and managing object performance, because it enables you to quickly locate objects with performance issues and to begin the troubleshooting process.



By default, objects on the performance inventory pages are sorted based on object performance criticality. Objects with new critical performance events are listed first, and objects with warning events are listed second. This provides an immediate visual indication of issues that must be addressed. All performance data is based on a 72-hour average.

You can easily navigate from the object inventory performance page to an object details page by clicking the object name in the object name column. For example, on the Performance/All Nodes inventory page, you would click a node object in the **Nodes** column. The object details page provides in-depth information and detail about the selected object, including side-by-side comparison of active events.

Object monitoring using the Performance object inventory pages

The Performance object inventory pages enable you to monitor object performance based on the values of specific performance counters or based on performance events. This is beneficial because identifying objects with performance events enables you to investigate the cause of cluster performance issues.

The Performance object inventory pages display the associated counters, associated objects, and performance threshold policies for all objects in all clusters. These pages also enable you to apply performance threshold policies to objects. You can sort the page based on any column, filter the results to reduce the number of returned objects, and you can search across all object names or data.

You can export data from these pages to a comma-separated values (`.csv`) file, Microsoft Excel file (`.xlsx`), or (`.pdf`) document by using the **Reports** button, and then use the exported data to build reports. Additionally, you can customize the page and then schedule a report to be created and emailed on a regular basis by using the **Scheduled Reports** button.

Refining Performance inventory page contents

The inventory pages for performance objects contain tools to help you refine object inventory data content, enabling you to locate specific data quickly and easily.

Information contained within the Performance object inventory pages can be extensive, often spanning multiple pages. This kind of comprehensive data is excellent for monitoring, tracking, and improving performance; however, locating specific data requires tools to enable you to quickly locate the data for which you are looking. Therefore, the Performance object inventory pages contain functionality for searching, sorting, and filtering. Additionally, searching and filtering can work together to further narrow your results.

Searching on Object Inventory Performance pages

You can search strings on Object Inventory Performance pages. Use the **Search** field located at the top right of the page to quickly locate data based on either object name or policy name. This enables you to quickly locate specific objects and their associated data, or to quickly locate policies and view associated policy object data.

Steps

1. Perform one of the following options, based on your search requirements:

To locate this…	Type this…
A specific object	The object name into the **Search** field, and click **Search**. The object for which you searched and its related data is displayed.
A user-defined performance threshold policy	All or part of the policy name into the **Search** field, and click **Search**. The objects assigned to the policy for which you searched are displayed.

Sorting on the Object Inventory Performance pages

You can sort all data on Object Inventory Performance pages by any column in ascending or descending order. This enables you to quickly locate object inventory data, which is helpful when examining performance or beginning a troubleshooting process.

About this task

The selected column for sorting is indicated by a highlighted column heading name and an arrow icon indicating the sorting direction at the right of the name. An up arrow indicates ascending order; a down arrow indicates descending order. The default sort order is by **Status** (event criticality) in descending order, with the most critical performance events listed first.

Steps

1. You can click a column name to toggle the sort order of the column in ascending or descending order.

   The Object Inventory Performance page contents are sorted in ascending or descending order, based on the selected column.

Filtering data in the Object Inventory Performance pages

You can filter data in the Object Inventory Performance pages to quickly locate data based on specific criteria. You can use filtering to narrow the contents of the Object Inventory Performance pages to show only the results you have specified. This provides a very efficient method of displaying only the performance data in which you are interested.

About this task

You can use the Filtering panel to customize the grid view based on your preferences. Available filter options are based on the object type being viewed in the grid. If filters are currently applied, the number of applied filters displays at the right of the Filter button.

Three types of filter parameters are supported.

Parameter	Validation
String (text)	The operators are **contains**, **starts with**, **ends with**, and **does not contain**.
Number	The operators are **greater than**, **less than**, **in the last**, and **between**.
Enum (text)	The operators are **is** and **is not**.

The Column, Operator, and Value fields are required for each filter; the available filters reflect the filterable columns on the current page. The maximum number of filters you can apply is four. Filtered results are based on combined filter parameters. Filtered results apply to all pages in your filtered search, not just the page currently displayed.

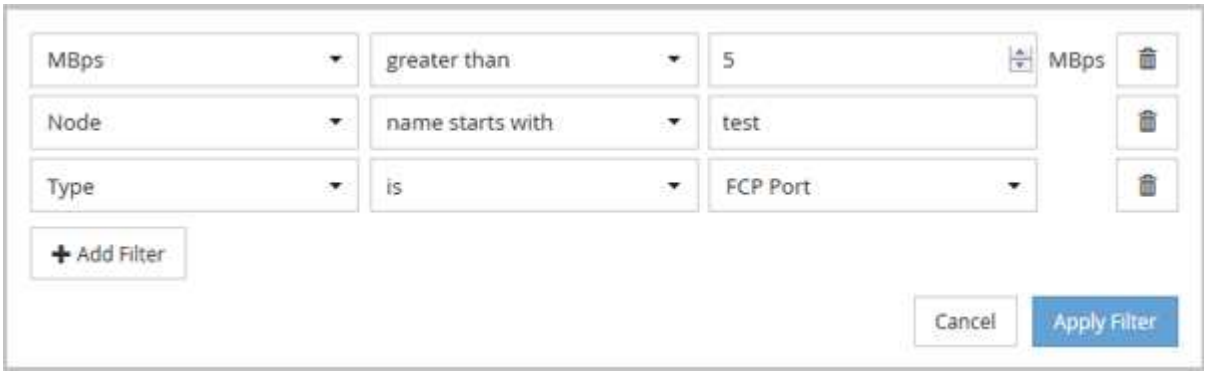
You can add filters using the Filtering panel.

1. At the top of the page, click the **Filter** button. The Filtering panel displays.
2. Click the left drop-down list and select an object; for example, *Cluster*, or a performance counter.
3. Click the center drop-down list, and select the operator you want to use.
4. In the last list, select or enter a value to complete the filter for that object.
5. To add another filter, click **+Add Filter**. An additional filter field displays. Complete this filter using the process described in the preceding steps. Note that upon adding your fourth filter, the **+Add Filter** button no longer displays.
6. Click **Apply Filter**. The filter options are applied to the grid and the number of filters is displayed to the right of the Filter button.

7. Use the Filtering panel to remove individual filters by clicking the trash icon at the right of the filter to be removed.
8. To remove all filters, click **Reset** at the bottom of the filtering panel.

Filtering example

The illustration shows the Filtering panel with three filters. The **+Add Filter** button displays when you have fewer than the maximum of four filters.



After clicking **Apply Filter**, the Filtering panel closes, applies your filters, and shows the number of filters applied (3).

Understanding the Unified Manager recommendations to tier data to the cloud

The Performance: All Volumes view displays information related to the size of the user data stored on the volume that is inactive (cold). In some cases, Unified Manager identifies certain volumes that would benefit by tiering the inactive data to the cloud tier (cloud provider or StorageGRID) of a FabricPool-enabled aggregate.

FabricPool was introduced in ONTAP 9.2, so if you are using a version of ONTAP software prior to 9.2, the Unified Manager recommendation to tier data requires upgrading your ONTAP software. Additionally, the `auto` tiering policy was introduced in ONTAP 9.4, and the `all` tiering policy was introduced in ONTAP 9.6, so if the recommendation is to use the `auto` tiering policy, you must upgrade to ONTAP 9.4 or greater.

The following three fields on Performance: All Volumes view provide information about whether you can improve your storage system's disk utilization and save space on the performance tier by moving inactive data to the cloud tier.

- **Tiering Policy**

  The tiering policy determines whether the data on the volume remains on the performance tier or whether some of the data is moved from the performance tier to the cloud tier.

  The value in this field indicates the tiering policy set on the volume, even if the volume does not currently reside on a FabricPool aggregate. The tiering policy takes effect only when the volume is on a FabricPool aggregate.

- **Cold Data**

  The cold data displays the size of the user data stored on the volume that is inactive (cold).

  A value is displayed here only when using ONTAP 9.4 or greater software because it requires that the aggregate on which the volume is deployed has the `inactive data reporting` parameter set to `enabled`, and that the minimum number of cooling days threshold has been met (for volumes that use the `snapshot-only` or `auto` tiering policy). Otherwise the value is listed as “N/A”.

- **Cloud Recommendation**

  After enough information has been captured about the data activity on the volume, Unified Manager may determine there is no action required, or that you could save space on the performance tier by tiering inactive data to the cloud tier.

> The Cold Data field is updated every 15 minutes, but the Cloud Recommendation field is updated every 7 days when the cold data analysis is performed on the volume. Therefore, the exact amount of cold data may differ between the fields. The Cloud Recommendation field displays the date when the analysis was run.

When Inactive Data Reporting is enabled, the Cold Data field displays the exact amount of inactive data. Without the inactive data reporting capability Unified Manager uses performance statistics to determine if data is inactive on a volume. The amount of inactive data is not displayed in the Cold Data field in this case, but it is displayed when you hover your cursor over the word **Tier** to view the cloud recommendation.

The cloud recommendations you will see are:

- **Learning**. Not enough data has been collected to make a recommendation.
- **Tier**. Analysis has determined that the volume contains inactive (cold) data and that you should configure the volume to move that data to the cloud tier. In some cases this may require that you move the volume to a FabricPool-enabled aggregate first. In other cases where the volume is already on a FabricPool aggregate, you just have to change the tiering policy.
- **No Action**. Either the volume has very little inactive data, the volume is already set to the “auto” tiering policy on a FabricPool aggregate, or the volume is a data protection volume. This value is also displayed when the volume is offline or when it is being used in a MetroCluster configuration.

To move a volume, or to change the volume tiering policy or the aggregate inactive data reporting settings, use ONTAP System Manager, the ONTAP CLI commands, or a combination of these tools.

If you are logged in to Unified Manager with the Application Administrator or Storage Administrator role, the **Configure Volume** link is available in the cloud recommendation when you hover your cursor over the word **Tier**. Click this button to open the Volumes page in System Manager to make the recommended change.

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